

## § 39.2003

(ii) One or more 15.9 millimeter (0.625 inch) diameter hole(s) located midway between boltholes and in line with the bolthole pattern; and

(6) Be abrasion and kinking resistant.

(j) Each vessel vapor connection flange face must have a permanent stud projecting outward that has a 12.7 millimeter (0.5 inch) diameter and is at least 25.4 millimeters (1 inch) long. It must be located at the top of the flange face, midway between boltholes, and in line with the bolthole pattern.

(k) Quick disconnect couplings (QDCs) may be used instead of flanges at the flexible hose connection and fixed piping on tankships provided they meet ASTM F1122 (incorporated by reference, see 46 CFR 39.1005) and are designed as "Standard Class QDC."

(l) Hose saddles that provide adequate support to prevent kinking or collapse of hoses must accompany vapor hose handling equipment.

(m) For cargoes that have toxic properties, listed in 46 CFR Table 151.05 with the "Special requirements" column referring to 46 CFR 151.50-5, an overfill alarm and shutdown system that meet the requirements of 46 CFR 39.2007(a), 39.2009(a), or 39.2009(b) must be used for primary overfill protection. If the vessel is also equipped with spill valves or rupture disks, their setpoints must be set higher than the vessel's pressure relief valve setting as required by 46 CFR 39.2009(a)(3).

## § 39.2003 Cargo gauging system—TB/ALL.

(a) A cargo tank of the tank vessel connected to a vapor collection system must be equipped with a permanent or portable cargo gauging device that—

(1) Is a closed type as defined in 46 CFR 151.15.10(c) that does not require opening the tank to the atmosphere during cargo transfer;

(2) Allows the operator to determine the level of liquid in the tank for the full range of liquid levels in the tank;

(3) Has an indicator for the level of liquid in the tank that is located where cargo transfer is controlled; and

(4) If portable, is installed on the tank during the entire transfer operation.

(b) Each cargo tank of a tank barge must have a high-level indicating de-

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vice, unless the barge complies with 46 CFR 39.2009(a). The high-level indicating device must—

(1) Indicate visually the level of liquid in the cargo tank when the liquid level is within a range of 1 meter (3.28 feet) of the top of the tank;

(2) Show a permanent mark to indicate the maximum liquid level permitted under 46 CFR 39.3001(e) at even keel conditions; and

(3) Be visible from all cargo control areas.

## § 39.2007 Tankship liquid overfill protection—T/ALL.

(a) Each cargo tank of a tankship must be equipped with an intrinsically safe high-level alarm and a tank overfill alarm.

(b) If installed after July 23, 1990, the high-level alarm and tank overfill alarm required by paragraph (a) of this section must—

(1) Be independent of each other;

(2) Activate an alarm in the event of loss of power to the alarm system;

(3) Activate an alarm during the failure of electrical circuitry to the tank level sensor; and

(4) Be able to be verified at the tank for proper operation prior to each transfer. This procedure may be achieved with the use of an electronic self-testing feature that monitors the condition of the alarm circuitry and sensor.

(c) The high-level alarm required by paragraph (a) of this section must—

(1) Activate an alarm once the cargo level reaches 95 percent of the tank capacity or higher, but before the tank overfill alarm;

(2) Be identified with the legend "High-level Alarm" in black letters at least 50.8 millimeters (2 inches) high on a white background; and

(3) Activate a visible and audible alarm so that it can be seen and heard on the vessel where cargo transfer is controlled.

(d) The tank overfill alarm required by paragraph (a) of this section must—

(1) Be independent of the cargo gauging system;

(2) Be identified with the legend "TANK OVERFILL ALARM" in black letters at least 50.8 millimeters (2 inches) high on a white background;

(3) Activate a visible and audible alarm so that it can be seen and heard on the vessel where cargo transfer is controlled and in the cargo deck area; and

(4) Activate an alarm early enough to allow the person in charge of transfer operations to stop the cargo transfer before the tank overflows.

(e) If a spill valve is installed on a cargo tank fitted with a vapor collection system, it must meet the requirements of 46 CFR 39.2009(c).

(f) If a rupture disk is installed on a cargo tank fitted with a vapor collection system, it must meet the requirements of 46 CFR 39.2009(d).

**§ 39.2009 Tank barge liquid overflow protection—B/ALL.**

(a) Each cargo tank of a tank barge must have one of the following liquid overflow protection arrangements:

(1) A system meeting the requirements of 46 CFR 39.2007 that—

(i) Includes a self-contained power supply;

(ii) Is powered by generators on the barge; or

(iii) Receives power from a facility and is fitted with a shore tie cable and a 120-volt, 20-ampere explosion-proof plug that meets—

(A) ANSI NEMA WD-6 (incorporated by reference, see 46 CFR 39.1005);

(B) NFPA 70, Articles 406.9 and 501-145 (incorporated by reference, see 46 CFR 39.1005); and

(C) 46 CFR 111.105-9;

(2) An intrinsically safe overflow control system that—

(i) Is independent of the cargo-gauging device required by 46 CFR 39.2003(a);

(ii) Activates an alarm and automatic shutdown system at the facility overflow control panel 60 seconds before the tank is 100 percent liquid-full during a facility-to-vessel cargo transfer;

(iii) Activates an alarm and automatic shutdown system on the vessel discharging cargo 60 seconds before the tank is 100 percent liquid-full during a vessel-to-vessel cargo transfer;

(iv) Can be inspected at the tank for proper operation prior to each loading;

(v) Consists of components that, individually or in series, will not generate or store a total of more than 1.2 volts

(V), 0.1 amperes (A), 25 megawatts (MW), or 20 microJoules ( $\mu$ J);

(vi) Has at least one tank overflow sensor switch per cargo tank that is designed to activate an alarm when its normally closed contacts are open;

(vii) Has all tank overflow sensor switches connected in series;

(viii) Has interconnecting cabling that meets 46 CFR 111.105-11(b) and (d), and 46 CFR 111.105-17(a); and

(ix) Has a male plug with a five-wire, 16-A connector body meeting IEC 60309-1 and IEC 60309-2 (both incorporated by reference, see 46 CFR 39.1005), that is—

(A) Configured with pins S2 and R1 for the tank overflow sensor circuit, pin G connected to the cabling shield, and pins N and T3 reserved for an optional high-level alarm circuit meeting the requirements of this paragraph; and

(B) Labeled “Connector for Barge Overflow Control System” and labeled with the total inductance and capacitance of the connected switches and cabling;

(3) A spill valve that meets ASTM F1271 requirements (incorporated by reference, see 46 CFR 39.1005), and—

(i) Relieves at a predetermined pressure higher than the pressure at which the pressure relief valves meeting the requirements of 46 CFR 39.2011 operate;

(ii) Limits the maximum pressure at the top of the cargo tank during liquid overflow to not more than the maximum design working pressure for the tank when at the maximum loading rate for the tank; and

(iii) Has a means to prevent opening due to cargo sloshing while the vessel is in ocean or coastwise service; or

(4) A rupture disk arrangement that meets paragraphs (a)(3)(i), (ii), and (iii) of this section and is approved by the Commandant.

(b) A tank barge authorized to carry a cargo having toxic properties, meaning they are listed in 46 CFR Table 151.05 with the “Special requirements” column referring to 46 CFR 151.50-5, must comply with the requirements of 46 CFR 39.2001(m).

**§ 39.2011 Vapor overpressure and vacuum protection—TB/ALL.**

(a) The cargo tank venting system required by 46 CFR 32.55 must—